



Mapping community determinants of heat vulnerability

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Abstract:

BACKGROUND: The evidence that heat waves can result in both increased deaths and illness is substantial, and concern over this issue is rising because of climate change. Adverse health impacts from heat waves can be avoided, and epidemiologic studies have identified specific population and community characteristics that mark vulnerability to heat waves. **OBJECTIVES:** We situated vulnerability to heat in geographic space and identified potential areas for intervention and further research. **METHODS:** We mapped and analyzed 10 vulnerability factors for heat-related morbidity/mortality in the United States: six demographic characteristics and two household air conditioning variables from the U.S. Census Bureau, vegetation cover from satellite images, and diabetes prevalence from a national survey. We performed a factor analysis of these 10 variables and assigned values of increasing vulnerability for the four resulting factors to each of 39,794 census tracts. We added the four factor scores to obtain a cumulative heat vulnerability index value. **RESULTS:** Four factors explained > 75% of the total variance in the original 10 vulnerability variables: a) social/environmental vulnerability (combined education/poverty/race/green space), b) social isolation, c) air conditioning prevalence, and d) proportion elderly/diabetes. We found substantial spatial variability of heat vulnerability nationally, with generally higher vulnerability in the Northeast and Pacific Coast and the lowest in the Southeast. In urban areas, inner cities showed the highest vulnerability to heat. **CONCLUSIONS:** These methods provide a template for making local and regional heat vulnerability maps. After validation using health outcome data, interventions can be targeted at the most vulnerable populations.

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2801183>

Resource Description

Exposure : ☒

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat

Geographic Feature: ☒

resource focuses on specific type of geography

None or Unspecified

Climate Change and Human Health Literature Portal

Geographic Location:

resource focuses on specific location

United States

Health Impact:

specification of health effect or disease related to climate change exposure

Injury, Morbidity/Mortality, Other Health Impact

Other Health Impact: heat related illness

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Elderly, Low Socioeconomic Status, Racial/Ethnic Subgroup

Other Racial/Ethnic Subgroup: non-white

Other Vulnerable Population: living alone; people with diabetes

Resource Type:

format or standard characteristic of resource

Policy/Opinion, Research Article

Resilience:

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content